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Hotel for Missoula, Montana

By G. A. Pehrson, A.I.A.*

MISSOULA, Mont., is a town of 20,000—small when compared to large metropolitan centers but not small or unimportant by local comparisons. It is located in the ch Bitter Root Valley which it serves as chief distributing nter. It is on the main lines of the Northern Pacific and e Milwaukee railways. Geographically it is Montana's avel center, being on U. S. 10, the principal northern anscontinental highway, and on U. S. 93 which serves th Glacier National Park, Banff and Lake Louise in the rth and the wonderlands Idaho, Nevada and Ari- na to the south. Missoula the home of the University Montana and is the largest ty in the state west of the ockies. As a commercial, avel and cultural center, issoula is visited annually thousands of people of the pe that demands fine hotel cilities.

To meet this demand a ew Hotel Florence was pened in March, 1941. It is seven-story structure built replace another Hotel Florence which was destroyed by fire in 1936. The new building is in every way a modern hotel structure—completely fire-resistant and equipped with accommodations equal to the best standards set by hotels in large cities.

When the requirements for this building were set before me as architect, the use of architectural concrete as the medium of construction immediately suggested itself. There are several reasons for this: During the past decade I have designed numerous buildings in concrete—houses, schools, hospitals, powerhouses and store buildings—and all of these projects turned out so successfully in this material that I have had no hesitation in recommending it as an ideal material from the standpoint of sound construction, desirable appearance particularly in the expression of contemporary styles, and economy. Before this building was set up for concrete, however, the owners made a study of several types of construction to convince themselves that architectural concrete was

Luxurious lobby of Hotel Florence at Missoula, Mont.

*Spokane, Wash.

Fire has plagued the long history of Hotel Florence. The first one, built on the same site, was destroyed by fire in 1913. The second Hotel Florence (above) burned in 1936. New Hotel Florence will never burn, having walls, floors and roof of reinforced concrete.

suitable for this very vigorous climate. Evidence that a large number of concrete buildings have been showing exemplary performance in every type of climate was sufficient assurance that it would be proper in Missoula. The advantages of concrete in producing new and fresh appearance and its economy of construction and maintenance, were clinching arguments in favor of this material.

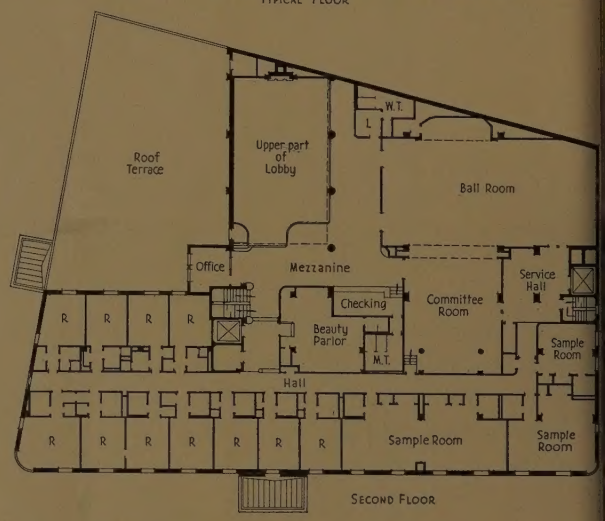
The building occupies a site in the center of the business district. Its main frontage, 165 ft. long, is on the principal street of Missoula while its second front is 132 ft. The importance of these streets largely determined the main floor arrangements shown in the accompanying floor plan. Several fine shops and stores are located along the street elevations. Lobby, main dining room, coffee shop, cocktail lounge and kitchen occupy the remaining ground level space.

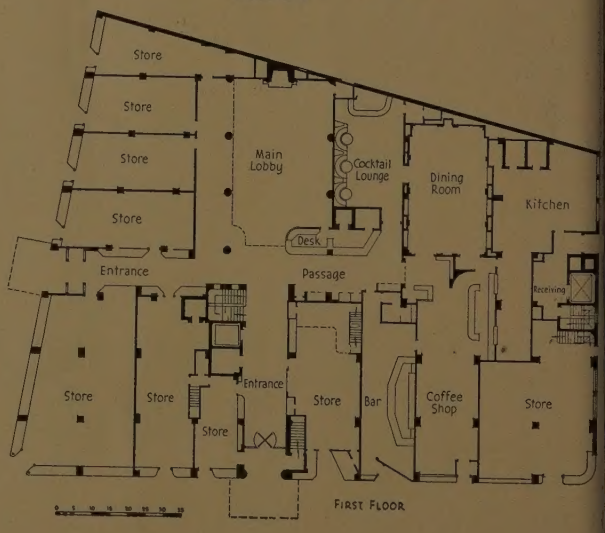
To the rear, the building is two stories high. The lobby, encircled by a mezzanine, is open for the full two-story height and is pleasantly day-lighted by means of large skylights. A ballroom, committee room and private dining rooms are located elsewhere in the two-story portion.

At third-floor level the building reduces in size to its constant shape in the upper stories—an elongated prism with slight rectangular offsets on the rear side at the stair and elevator locations. Reference to the typical floor plan shows the conventional hotel room arrangement in the upper stories, comprising a central corridor flanked by baths and closets with rooms proper located along the exterior walls. There are 25 bedrooms on each floor.

Construction is of reinforced concrete throughout—floors, walls and roof, with concrete exposed on the exterior except where decorative facings are added. On street fronts lower portions of the columns are faced with black granite. The deep second-floor spandrel is veneered with terra cotta, and there is an aluminum band above the store windows. Glass, behind which there are lights, is used at spandrel balconies above the entrance, and other spandrels in the main frontages have brown terra cotta facings.

The exposed concrete—the wide piers on main elevations and the entire walls of other elevations—assumes the





ghtful soft texture of the celotex used as liner for the erior wall forms. This lining material, employed without or other treatment, absorbed some of the moisture in concrete, decreasing water voids in wall surfaces.

After the forms were stripped and the concrete walls roughly cleaned, portland cement paint was applied to duce a warm cream color on all exposed concrete sur-es. The whole structure, therefore, gives the impression a large light-colored mass, modified by details in con-sting tones of color.

The completion of this building, to me at least, is con-cing proof that architectural concrete is useful and propriate for any type of structure. The use of this terial may require a little more study to find the right ture and the right detail for a dam, a powerhouse, school commercial building, but the reward is the achievement what every architect wants—something new for his client.

Owner of the new Florence Hotel is the Missoula Real ate Association. The building was erected by Alloway & org, contractors of Spokane, Wash., who have had wide perience in the construction of fine concrete buildings.

odern beauty and comfort were the aims of G. A. Pehrson, okane, Wash., architect, for the design of Hotel Florence. loway & Georg, Spokane contractors, revealed their long expe-nce with architectural concrete by their splendid execution.

Municipal Building for Stillwater, Ok

By Thomas L. Sorey*

STILLWATER is a small, progressive town in north central Oklahoma, home of Oklahoma A. & M. College. The activities of the town are paced by an efficient local government and protected by an active police department that so thoroughly enforced the town's traffic laws that, in 1940, Stillwater won an important national award for traffic safety.

About two years ago the city fathers decided that the growing community needed a new city hall to replace the old makeshift quarters that were used up to that time. In planning their new building they made a considerable study of city hall structures elsewhere and came to the conclusion that they would like a strictly modern building and that it should be erected in architectural concrete.

Our firm was commissioned to prepare the plans for the building, and it was our first job in architectural concrete. I cannot say that we approached the work with any feeling of apprehension due to unfamiliarity with the medium. Enough architectural concrete work has been done during the past several years to assure anyone that desired results can be obtained if standard and accepted practices are carefully followed.

We designed a modern building, but modified the purely modern lines with suggestions here and there of classic motifs—and the medium of construction was kept in mind constantly as the planning progressed.

The building is divided into several functional units—a two-story office section flanked by story-and-a-half wings, one of which encloses the council chamber and the other the courtroom. To the rear, with its entrance located at one side of the building, is the police department and jail with an automobile entrance sheltered by a supported concrete canopy.

Concrete walls of the building are 10 in. thick cast against ¾-in. plywood on the exterior and against 2 in. of

*Sorey, Hill & Sorey, architects, Oklahoma City.

Municipal building, Stillwater, Okla., has modern lines modified by classic details. The smooth-formed walls are finished with buff portland cement paint. Sorey, Hill & Sorey, Oklahoma City, architects and engineers. Built by Tankersley Construction Co., of Oklahoma City.

ılation material on the inside. The form panels were mitted to reveal horizontal and vertical joints in such a nner that strong mass effects are produced in the plain l areas. Molded detail plays an important part in ieving the over-all effect of the design although this ail is sparingly used. The decorative bands at the coping irely around the building were formed with repeating ster waste mold designs. The fluted columns which give classic effect to the two-story main entrance were cast

olumns at the main entrance were formed with wood molds up pitals which were formed in plaster.

wood molds with plaster mold capital forms.

Concrete was placed in lifts of about 8 ft. The material as handled well in the forms to produce a highly satisfac- ory surface texture. After cleaning, the exterior walls were iven two coats of buff-tinted portland cement paint.

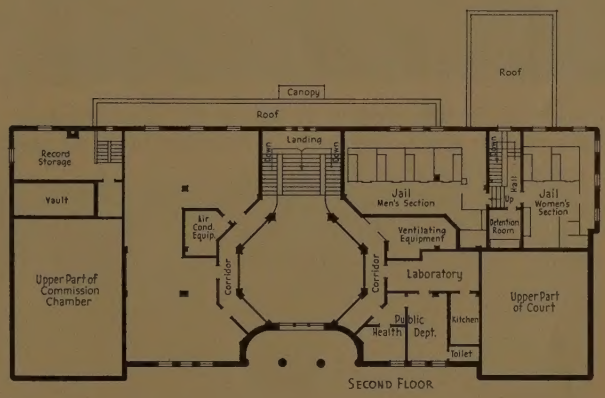
While the work was going on we gave careful attention o supervision but, I think, no more than we give to our uildings constructed of other material. The work pro-

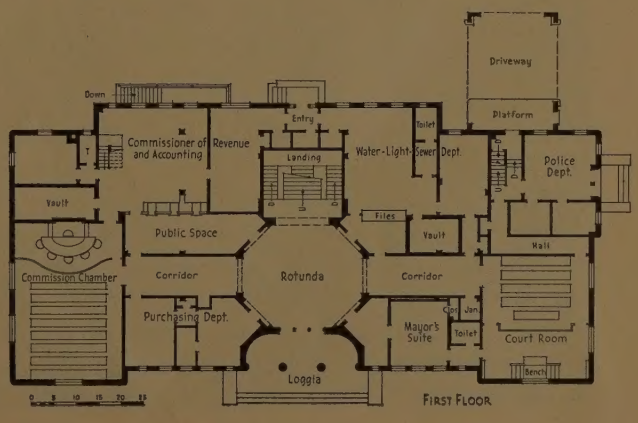
The police department has its own entrances—one an automobile entrance sheltered by a concrete canopy.

ceeded in a most satisfactory manner and the results meet all anticipations.

It is our opinion that architectural concrete lends itself well to all types of structures and that it is particularly adapted to designs in contemporary styles.

Stillwater Municipal Building, which is highly regarded locally and has received gratifying comment from all over the state, was erected and equipped completely at a cost of about $120,000 including about $15,000 for land.





Through the portal beneath this entrance facade pass most of the citizens of Proctor, Minn., sometime during every month, for the village hall is the social and cultural as well as local government center.

Village Hall in Minnesota

By E. F. Broomhall, Architect*

THE new village hall at Proctor, Minn., is typical of the municipal buildings erected in this section of the country in recent years in that it houses practically all of the activities of the community aside from those of church, school and business. Here under one roof is the city hall with all of its offices, the police department and jail, the fire department, a community hall with a stage for public gatherings, a kitchen to accommodate a banquet, and the headquarters of the American Legion.

Economy is the main reason for housing all of these civic functions in one building, and economy is the primary requirement in the construction of a building of this type in a community of this size where public revenue is low and costs must be kept always to a minimum. Construction by WPA made the building possible, and use of architectural concrete with its many advantages will certainly keep operation and maintenance to a negligible minimum for many years to come.

The building is a modified form of the modern style and is two stories in height with a full basement. It replaces an old wood structure, but includes part of the old city jail which is enclosed within the walls of the new building. As the photographs indicate, considerable use was made of molded detail—fluting on the pilasters which terminate by returning over the parapet wall, decorative bands at the coping line, and incised lettering on the curved wall over the main entrance. All of this detail was formed with wood molds, with plywood being used for the plain wall surfaces.

Since heating in winter is an important factor in this far north climate, rigid insulation was used throughout with the result that during the two winters through which this building has passed, the cost of keeping the entire structure comfortably warm was pleasingly low.

The concrete spandrel walls are 8 in. thick and the pilasters are 16 in. thick. Floors throughout have a terrazzo finish, a feature which provides a fine-looking floor and eliminates costly floor coverings and frequent replacement.

Concrete work on this building is exceptionally fine. The several intricate features such as the curved wall and the cantilevered concrete canopy were executed with precision. The sharpness of the detail is evidence of the care taken in placing the concrete in the forms. It is a first-class job in every respect.

The two severe winters since the building was completed in 1939 have failed to make an impression on the exterior, and the building is in perfect condition today. This performance has thoroughly convinced me that concrete can stand up with any material in severe climates. Because this material has the further advantages of brilliant appearance, firesafety and low cost, I have found it desir-

*Duluth, Minn.

e for additional buildings which I have designed and now under construction in Minnesota.

One of the most pleasing incidents following the com- tion of Proctor Village Hall was the acceptance of this lding for fire insurance at the lowest rate in the state. course, the fire department wouldn't have to go very far to douse a blaze, but since the structure is all concrete except windows and doors it is doubtful whether there would ever be a fire to fight.

Citizens of Proctor are very well pleased with the building and the Minnesota WPA office considers it one of its best jobs to date.

F. Broomhall, architect of Duluth, Minn., was the designer of this modern building which is considered one of the finest WPA jobs in state. The building also has the distinction of having the lowest fire insurance rating in Minnesota.

Charles F. Whittlesey—Concrete Pioneer

1867-1941

THE death of Charles F. Whittlesey, pioneer West Coast architect on January 1, 1941, was naturally a great loss to his family, his many intimate friends, and to the profession to which he contributed so much during his long and useful career. But it is the fortune of this world that neither the good nor the evil a man does, nor the wealth he gathers, nor the knowledge he has won and shared with others, pass with him. In the case of Charles Whittlesey the heritage is much of good, and it must be true that most of this man who was measured by action, deeds and strong convictions, still remains in the world.

The late Charles F. Whittlesey.

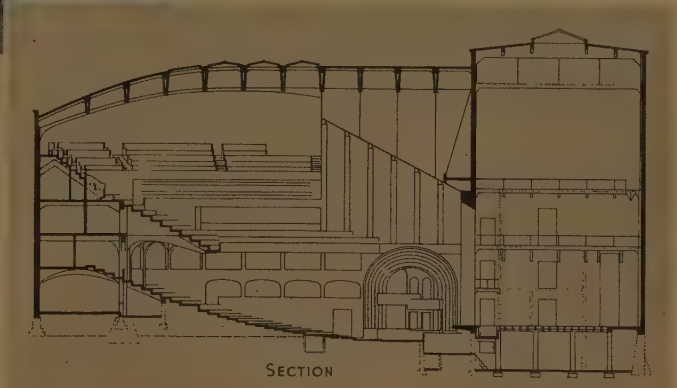
He was a pioneer in the true sense—eager to explore, to learn and to prove, then to apply what he had learned of what was new and promising. Because he was not jealous of what he had discovered for himself, he was a teacher—and in this way he influenced his time and the future.

In particular, Charles Whittlesey was a pioneer in the use of reinforced concrete. He was one of the first friends of modern concrete; in fact he was a protector and defender of the young material against the slanders of ignorance, indifference and fear which tended, during the early years of this century, to relegate concrete to uses far beneath its newly discovered possibilities. His designs for reinforced concrete seemed daring, even audacious in those early years, and his defense of his practices was definitely militant. But there is nothing like success to prove a man is right—and Charles Whittlesey's work was eminently successful. To this brilliant man, as an advocate, reinforced concrete owes much.

Mr. Whittlesey was born March 10, 1867, in Alton, Ill. As a boy he worked for Louis Sullivan, the man who possibly more than any other spread the contagion of originality in American architecture. Many of the bright young men who crowded about Louis Sullivan in those great Chicago days later made seven league strides of their own, and among them was young Whittlesey. He went far at the very beginning. He went West—and it was then much farther than it is today.

He set up as a practicing architect at the age of 24. By 1900, when he was 33, his originality was so apparent that he was made architect for the Santa Fe Railroad in which job he developed the characteristic Santa Fe station in the style of the missions of the Southwest and of the Pueblo Indian buildings of New Mexico. He will be long remem-

Whittlesey created a sensation with his design for the Philharmonic Auditorium, in Los Angeles, with its many cantilever balconies and bowed beam roof construction (see drawing). It was with such daring designs that Whittlesey championed concrete as a new building material with unlimited possibilities.



red for the Alvarado Hotel and station at Albuquerque d the El Tovar Hotel at Grand Canyon which were built 1901 and 1902.

His early work was done in the familiar architectural diums of the time, for he did not accept concrete without truggle and had to be converted to it. Of his "conversion" reinforced concrete he once said:

"I found time, somehow, to make a study of natural ment concrete in ancient structures and was amazed at e performance of the material over these hundreds of ars. I then studied the history of portland cement con-ete, trying to discover the reasons for its occasional fail-es, and watched with intense interest the first attempts to mbine concrete with metal reinforcement. Gradually I came convinced of the logic of combining concrete and el to form a building material of unlimited scope. Then llowed endless experiments and tests to prove what few ared to believe regarding such matters as firesafety, cor-sion and the ratio of modulii of elasticity between concrete and steel. All this in the end amounted to the conviction that the only faults that could be found with concrete were due to improper design or faulty construction."

He then began to use concrete in his work and to champion its cause against all critics.

This early work in concrete in the southern California area included such notable projects as the Huntington Hotel in Pasadena and the Philharmonic Auditorium in

nother of Whittlesey's early concrete buildings was Hotel Wentworth (now Huntington Hotel) in Pasadena, Calif. In design and construc-ion this building foreshadowed the widespread emergence of architectural concrete in the middle 1930's.

For the ballroom of Hotel Huntington, Whittlesey used flat arched roof girders of reinforced concrete about 48 ft. in span, which are continuous with clearstory columns.

The entrance to Mayflower Hotel, Los Angeles, indicates that Whittlesey had complete confidence in concrete for even the most intricate molded detail.

Los Angeles, both of which expressed his genius as an engineer as well as an architect. The Philharmonic Auditorium, with its many concrete cantilever balconies (some having an overhang of 28 ft.) and roof construction of bowed beams with a maximum span of 112 ft., brought down a storm of criticism and lifted more skeptical eyebrows than any building of its time.

To illustrate the state of mind with which Whittlesey's novel structural designs came in conflict, the late Weymouth Crowell, founder of the Weymouth Crowell Construction Co., of Los Angeles, who was contractor for the Philharmonic Auditorium, recalled:

"Many other contractors in the region were frankly skeptical about building the large dome and cantilevered balconies of the Philharmonic Building in concrete, and they made many pointed remarks with sad wagging of heads that they would not care to be in my shoes. Well, such work had never been done before, and I could be forgiven for not wishing to tempt the gods of luck too much. I took the precaution of carefully wedging the dome and balcony supports so that the supports could be let down by easy stages. If the dome and balcony fell, I promised, I would make a present of them to the owners—wedges, supports and all. But they did not fall, and never have been doubted since they were built. The soundness of the design and construction is evidenced by the fact that in recent years, since our present earthquake laws were enacted, the

Angeles Building Department has per-
ted an additional story to be added to
"Auditorium Building."

Thus was created the confidence in the use
concrete which was so necessary to the
id growth of reinforced concrete construc-
n in the field of usefulness.

The Huntington Hotel, originally the
tel Wentworth, was unusual in the use of
lular concrete construction of 6-in. bearing
lls at each room partition, with continuous
or slabs and no furred ceiling space. The
ing room has flat arched roof girders of
nforced concrete approximately 45 ft. in
an continuous with the clearstory columns.

Although much of Mr. Whittlesey's work
s with reinforced concrete used structur-
y, many of his early concrete jobs utilized
posed concrete surfaces with some orna-
nt cast in place. He definitely foresaw the
ming of architectural concrete.

After the earthquake of 1906, Mr. Whit-
sey went to San Francisco to assist in the
construction of that city. The Pacific Build-
g, a ten-story reinforced concrete structure,
one of his well-known buildings there.

By 1908, with a score of important rein-
rced concrete buildings behind him, he was
riting and talking about concrete and every-
dy was paying attention. In March of that
ar he wrote an all-out exposition of the
ssibilities of reinforced concrete for *Architect
d Engineer*, which is as sound reading today
it was then.

"Why do I believe in reinforced concrete
nstruction?" he asked at the start of that
rticle. "Because it combines economy in cost
ith maximum strength. Because it is fire-
roof. Because it permits of rapid construction
nd finally, because of its lasting qualities."

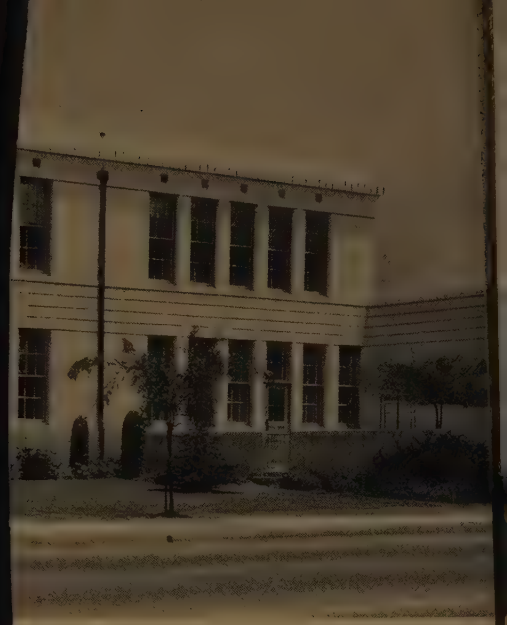
He knew it was firesafe because, he stated,
I have made numerous tests on concrete specimens by
epeatedly heating them to redness and then plunging them
n water." These tests disproved a common belief that con-
rete would disintegrate under great heat.

"In the argument for durability," Whittlesey wrote,
reinforced concrete is in a class by itself. It is by far the
most rigid and freest from vibration of any construction
known. The steel sinews forming the reinforcement give the
concrete sufficient elasticity to withstand admirably the
strains produced by earthquakes . . .

Hotel, built in 1926

"Never in all the records of the past has there been a failure of any reinforced concrete building in which the cause was not traceable to either faulty design, changing the placement of reinforcing members on the work contrary to the calculations of the designer, removal of forms before the concrete had properly set, . . . or the use of poor aggregates . . .

"The heavy buildings of the near future will be of reinforced concrete," he concluded, "and this form of construction, when done from the plans of competent architects and able engineers, will produce the greatest and most per-



ey, collaborated on the design of Hancock Park School

evenue, cutting insurance, depreciation and repa
amazingly low figure."

who were intimate with Mr. Whittlesey durin
s recall that he always expressed implicit faith i
tions and that he had a knowledge of his subje
that of most men at that time. They never kne
ry of reinforced concrete—and there were man
could successfully argue against him.

B. Lyman, a Los Angeles architect who was onc
with him, sums up the character and stature o

tlesey was a man of rare genius and a very color
er. He had no patience with carelessness, eithe
or construction. He was relentless in his super
ncrete work as he recognized that the success o
re could be ruined by faulty placement. Ther
who did not understand him—as is so often th
great men. He was the type of person with whor
be completely out of patience and yet love hi
deeply at the same time. No one, however, could ever ques
tion his sincerity of purpose; his honest conviction regardin
the virtues of reinforced concrete; or his rare ability t
design and use it. I deem it a great privilege to have bee
able, as a young man, to work closely with him and to hav
the benefit of his wise counsel and experience."

Two sons, Austin Whittlesey, an architect, and Harol
C. Whittlesey, a structural engineer, are today carrying o
the tradition of the elder Whittlesey, and in characteristi
fashion, for both have been associated with outstandin
projects in the course of the West Coast's high developmen
of concrete as an architectural medium.

School for Frostburg, Maryland

By Robert Holt Hitchins, Architect*

PRIOR to my undertaking the design of the new Frostburg, Md., High School in architectural concrete, my work had comprised chiefly structures employing brick walls, ordinary stone trim, and bar joist floors. For some time, however, I had desired strongly to execute a job in concrete because the examples of work in this medium that I had seen indicated that there was an unlimited field for experiment with modern design forms in concrete that no other building material offers.

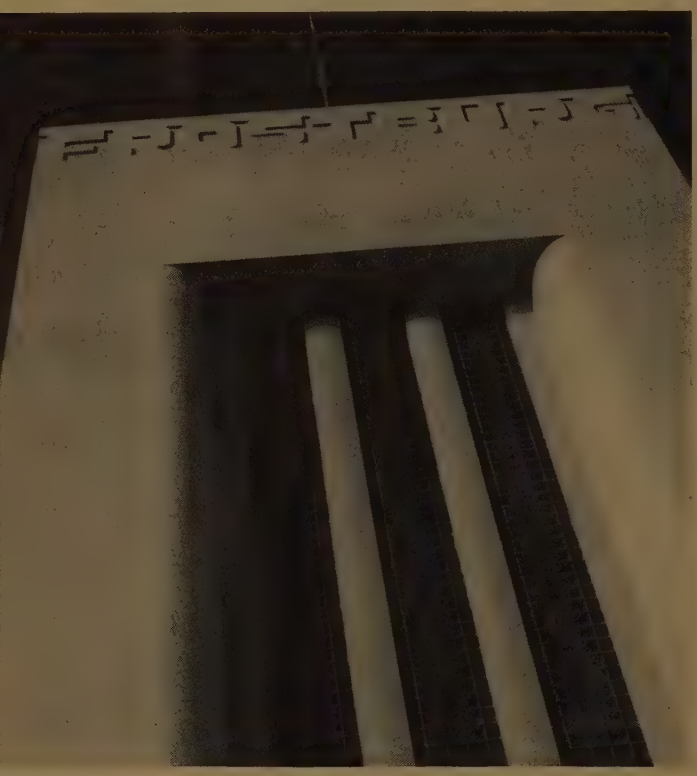
There were two reasons why I did not turn to concrete as soon as I wanted to: One was the feeling that I lacked sufficient knowledge of the use of concrete as an architectural medium to undertake an important job with complete confidence; the other was a suspicion that satisfactory work in this material could not be produced by local contractors who had not done this type of work before.

After considerable investigation, however, I was convinced that a satisfactory job could be produced if the designer's conception of the structure were adequately covered by plans and specifications and if the job were so carefully supervised that no mistakes of consequence could be made

*Cumberland, Md.

high school at Frostburg, Md., Architect Robert Holt Hitchins' architectural concrete building. e sure of fine results, he set up r-point program of design and ruction that was followed to letter by J. J. Bendik, con- or of Uniontown, Pa.

At the front of the building, the auditorium and gymnasium are located on either side of the main entrance which serves both with a common lobby.



Careful adherence to concrete specifications resulted in sharp, clean-molded detail.

Semicircular space at end of auditorium serves as music practice room behind stage. A similar area at end of gymnasium is a dressing room.

in execution. In view of this I outlined a four-point program of what an architect, doing his first concrete job, should do. And, since the results obtained were so pleasing, I am inclined to believe that this four-point outline of an architect's responsibility may well apply to any concrete job. They are:

1. To prepare plans and all necessary detail drawings in such a manner that it will be very obvious that the desired result can be obtained.
2. To write such complete specifications that all details are clearly explained and all points of construction thoroughly understandable.
3. To provide a competent, conscientious and cooperative inspector, who will insist that every detail of the plans and specifications is followed.
4. To vow solemnly that the architect will not permit any construction work to proceed unless the plans and specifications are complied with fully.

With these four points constantly in mind, plans for the Frostburg School were made in late 1938. The building was intended to be most modern, not only in architecture, but in plan arrangement and equipment.

Possibly the most interesting feature in the design of this building is the arrangement of separate auditorium and gymnasium units on both sides of the main entrance. These units are two stories in height, the second story of the auditorium having a balcony at the rear, the gymnasium having a clear two-story height. Both of these halls are served by one lobby which also gives access to the classroom portion of the building to the rear. The extreme ends of the auditorium and gymnasium units have semicircular walls, the end wall of the auditorium accommodating a chorus room behind the stage, a space which gives double service as dressing rooms. In the circular end of the gymnasium are all the showers, lockers and dressing rooms required for use of this portion of the structure for the school's physical education work and for indoor athletic events.

Dominating the main facade is a central mass which rises four stories above the main lobby. There are located administrative offices and the school library. The front facade is simple and rectangular, depending upon arrangement of masses and fenestration for architectural interest.

The classroom portion, which is three stories in height, is separated from the auditorium and gymnasium units by long corridors. To gain the maximum amount of natural illumination this part of the building is arranged into one long section one classroom in depth with three projecting

gs which form a large open court to the r of the building. These features are clearly wn in the plans, and although this arrangent is novel it has apparently proved effint, for C. L. Kopp, superintendent of ools, and teachers agree that circulation oughout the building is excellent.

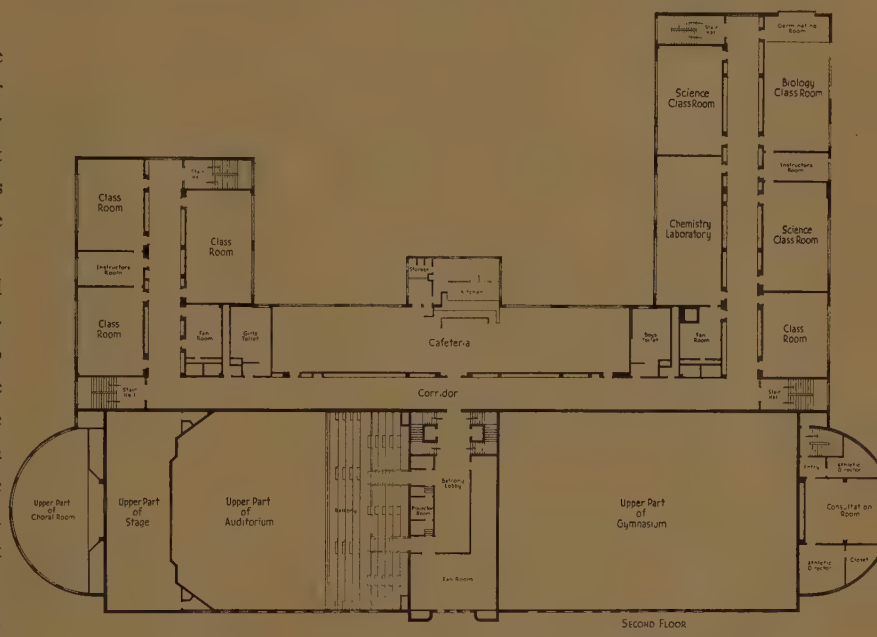
Expansion joints were located so as to arate the center unit from the wings and semicircular portions from the main parts the building. The expansion joints do not end through the foundations except at the ater. Control joints were used liberally oughout the building with excellent results. of these construction features which have h important bearing on the future performce of the building were laid out completely in drawings provided for the contractor.

The contract price of the building complete hout school equipment was $415,506, or out 30 cents per cu.ft. This figure is relatively v for firesafe construction in this region, for it generally conceded that most other buildings cted recently in Allegheny County, Md., have st between 32 and 35 cents per cu.ft.

The contractor complied with every word the specification and every line of the conuction details and, as a result, a first-class job s produced. I do not believe there was more an one square foot of honeycombed concrete the entire job. All horizontal construction nts are as near perfect as it is possible to make em, and people who have seen concrete all er the United States have said they have not en a better architectural concrete job anywhere.

Exterior walls, which were formed against ywood, were given two coats of white portland ment paint slightly tinged with grey to proce an off-white effect.

As might be expected, this job has been ghly pleasing to me. It proves that achievent of good work in architectural concrete is t a matter of luck at all, but sound procedure d careful adherence to the techniques that ve been developed for this type of work. It so proves that local contractors, unaccustomed working with architectural concrete, can do good concrete work as the most experienced—they are given the complete cooperation of the chitect and provided with plans and details hich leave no chance for misunderstanding.



haughnessy Hospital, Vancouver, B. C., provides modern medical facilities for the Canadian Department of Pensions and National Health. Mercer & onstruction Co., Ltd.—all of Vancouver. The building has a maximum bed capacity of 376.

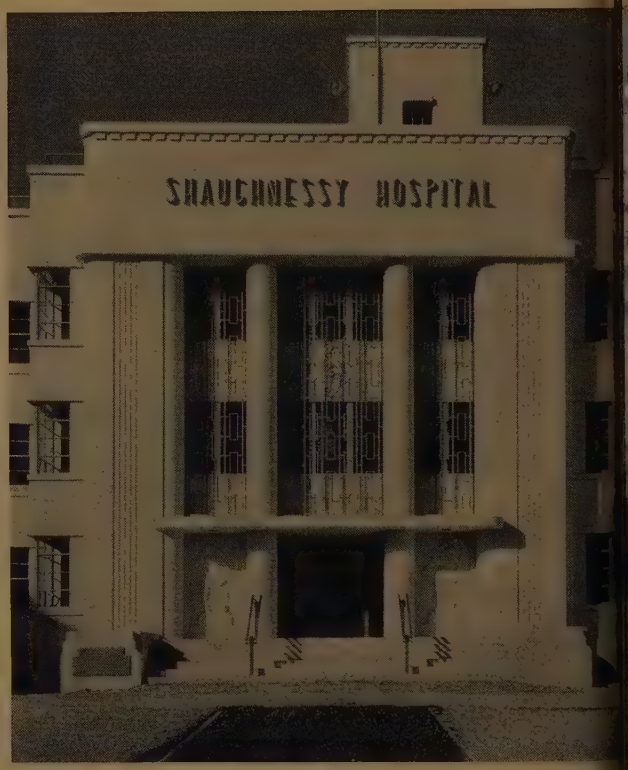
Military Hospital —Vancouver, B. C.

By Andrew L. Mercer*

SHAUGHNESSY Hospital, recently completed at Vancouver, B. C., was erected by the Public Works Department of Canada for the Department of Pensions and National Health. The plant is really two separate buildings —a hospital and an administration building which includes, aside from hospital offices, the quarters of the Department of Pensions and National Health.

The main hospital structure is erected on an H-shaped plan with the administration building extending along the north end to form an L with one of the wings. The hospital portion contains four usable stories including the depressed ground floor areas, while the administration building is three stories high. The hospital has a frontage of 372 ft., the wings having a length of 200 ft. and width of 47 ft.

In design the buildings are modern with a suggestion of classic detail at the entrance projections. At each side of the main entrance are two life-size cast stone panels depicting a surgeon and a wounded soldier on one side, and a military nurse and sick soldier on the other. Both buildings



Main entrance to the hospital is flanked by two large cast stone p which were made an integral part of the concrete walls.

are of concrete, including architectural concrete walls, concrete floors and roof.

The hospital building varies in some degree from the ordinary general hospital in that the patients are nearly all men. This permits a large number of wards and fewer semiprivate and private rooms. In the hospital, however,

*Mercer & Mercer, architects, Vancouver, B. C.

te[d] for the project, which was built by Armstrong & Monteith

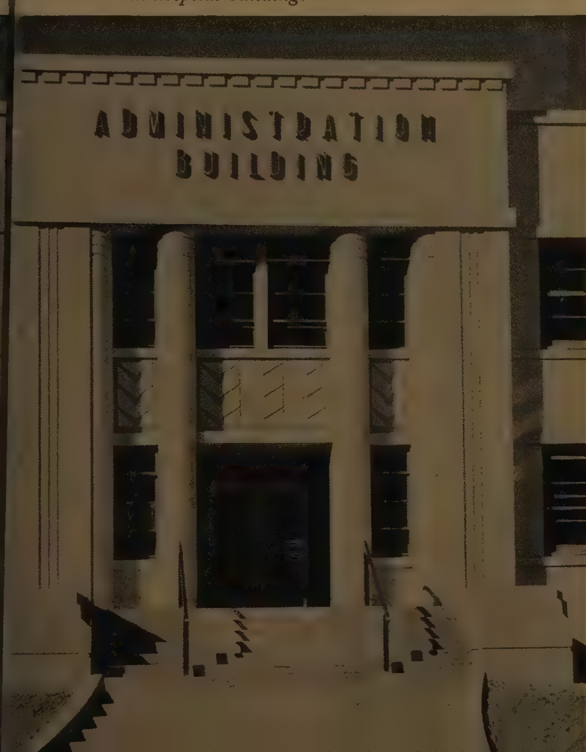
t[h]ere are rooms for female nurses who are ill.

Aside from the offices indicated above, the adminis-t[ra]tion building houses the orthopedic department where a[rti]ficial limbs, special boots and shoes are manufactured.

In the hospital unit most of the functional departments a[re] located on the ground floor as the floor plans show. A[n]other feature of the hospital is the auditorium, directly f[ac]ing the main entrance vestibule, which has seating for 4[0]0 and includes a projection room for sound pictures and a public address system. Upper floors are chiefly devoted t[o] patients' wards and rooms.

There are seven 24-bed wards, each of which may be

...trance to administration building, a separate functioning unit ... with the main hospital building.



subdivided into six 4-bed sections. These, in turn, by an arrangement of curtains may be divided off so that each bed can be made private if staff or patient so desires. In addition to the large wards there are 25 two-bed wards, 15 private rooms, and separate wards for skin diseases and neurotic patients. At each end of each wing, for its full width, are spacious solariums with large window areas

on three sides, which may be turned into wards.

Bed capacity, therefore, is 247 in wards and rooms, with accommodation increasing to 376 when the solariums are used as wards. This new bed capacity increases the total accommodation at the hospital, including old buildings on the grounds, to 913 beds.

The operating department, utilizing about half of the top floor area of the north wing, covers a space of approximately 80x41 ft. This portion is divided into major and minor operating rooms which are equipped with the most modern hospital facilities including multi-lens lighting which not only provides increased lighting, but eliminates shadows.

There were several reasons for the selection of architectural concrete for this hospital plant. Economy, naturally, was a large reason as was rapidity of construction. Firesafety is always a good reason for building a hospital of concrete, and it must be assumed that economies in maintenance and operation can be expected from a structure so stoutly built.

Foundations and ground floor walls of both buildings are 10-in. thick concrete with walls above this point 8 in. thick. Exterior surfaces of the concrete were formed against shiplap, and particular care was taken to have unbroken horizontal joints completely encircle the building. Surface treatment was two coats of buff portland cement paint.

Ready-mixed concrete was used throughout. It was placed by means of two tower hoists which lifted the concrete to required levels where it was dumped from hoppers into buggies and carried to point of deposit. Careful hand-tamping resulted in surfaces that required no patching other than that normally used to conceal tie rod holes. As the photographs attest, an excellent job of forming was done, to the complete satisfaction of all concerned.

The two sculptured panels at the main entrance were designed by Miss Beatrice Lennie, sculptor of Vancouver.

The administration building, with a cubic content of 309,825 ft., was erected at a cost of $124,000. The hospital unit, containing 1,350,116 cu.ft., cost $636,000. For a hospital of such elaborate plan and equipment, this cost is considered most reasonable.

Modern Freight Terminals in Concrete

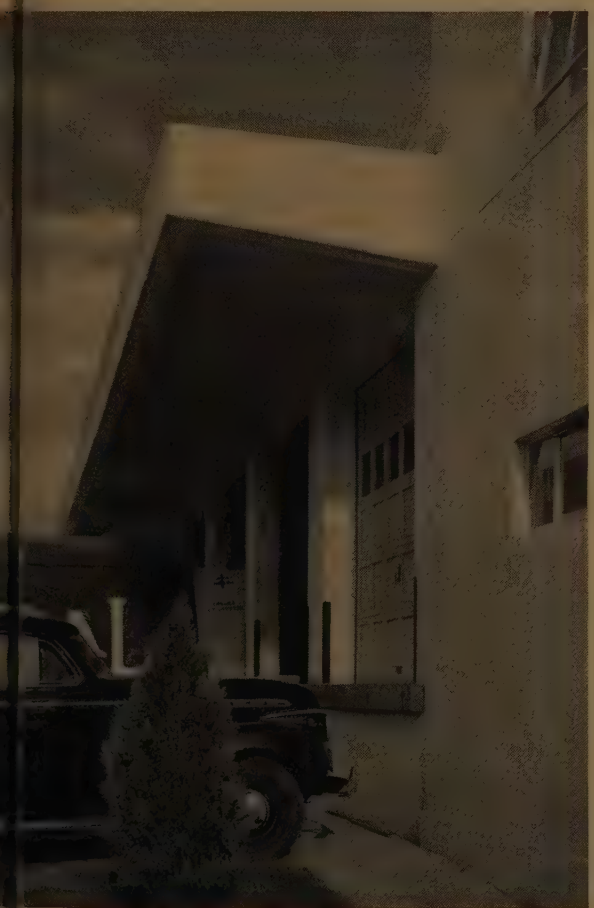
By W. W. Callan*

WHEN prehistoric man dropped his burden upon a crude slide and hitched it to some domesticated animal, he began to solve problems in the transportation of goods. Slowly he improved the form and capacity of the slide, gradually straightened his winding footpaths into something of a road. He invented the wheel that made possible the increase of his load. Then he found the rocks and roots that lay in his path delayed his delivery and he had to continue the improvement of his roads. The progress of both the equipment and the roads has been mutual in all the stages of development of transportation.

*President, Central Freight Lines, Inc., Waco, Texas.

A terminal building at Dallas, Texas, was one of the first concrete buildings erected under the new building program set up by Central Freight Lines, Inc., state-wide truck haulers, of Waco, Texas. Harry L. Spicer, of Waco, was architect. It was built by Cowdin Bros., contractors of Dallas, Texas.

eral office building, at Waco, also houses a shop for repair of trucks and for building new equipment. Designed by Harry L. Spicer, it was built by Construction Co., of Dallas.



nd beam canopy was used over the loading platform of the Dallas Better protection of goods is one of the important features in the all Central Freight Lines buildings.

So long as man's wooden wheel wagon was his truck and trailer and his winding path remained a crooked, rutty road for travel, the vast inland country remained static and undeveloped. With water as a natural highway, man early invented the sails and for long ages civilization flourished along the coast and upon the banks of navigable streams. Finally, the application of steam was discovered, the steamboat invented, and water transportation developed more rapidly than transportation on land. It was not long, however, until the locomotive ran upon steel rails and trade between cities and towns flourished in the inland territories.

It was during the first world war that merchants began to send their own trucks to the larger centers of distribution for their own goods. It is within the memory of living man that the gasoline truck was invented and paved roads began as an experiment.

Like his prehistoric ancestor, the man who operated the truck was still confronted with the need for improvement of equipment and better and more adequate highways. The engineering skill of the twentieth century has solved in large measure the need for better motor trucks and adequate highways. Other problems, however, have confronted those engaged in transportation of goods and merchandise in the motor freight industry. Accidents, due to tired and untrained drivers, as well as theft and damage of goods due to inadequate freight terminals, presented major problems.

Central Freight Lines, Inc., since its beginning in 1925, has made rapid progress. Our first emphasis was placed upon the careful selection and training of intelligent drivers and helpers. Many of the losses through damaged goods

and late deliveries were eliminated, but there was still a problem that was very acute.

In order to meet the increasing demand for improved transportation, Central Freight Lines, Inc., embarked upon the study of terminal facilities and how they could be made to fill the needs of the shipping public to better advantage. It was not enough to have frequent and regular schedules with improved modern trucks on smooth-riding concrete highways between the cities. There was and is a demand for adequate terminal facilities to insure rapid and safe assembling of freight waiting for shipment and the proper storing of goods awaiting delivery. The problem was to substitute, for the makeshift shed with corrugated iron roof and wooden floors and walls, a building where we could handle and protect our customers' goods as we would our own, and where those who handled the goods could do so with safety and efficiency.

A survey of terminal conditions revealed that high rentals were being paid by Central Freight Lines, Inc., for undesirable space in old and inadequate buildings. In many instances cargoes were stored in buildings which required high insurance premiums and an excessive amount of handling cost in loading and unloading freight. Locations were often changed to the inconvenience of the shipping public.

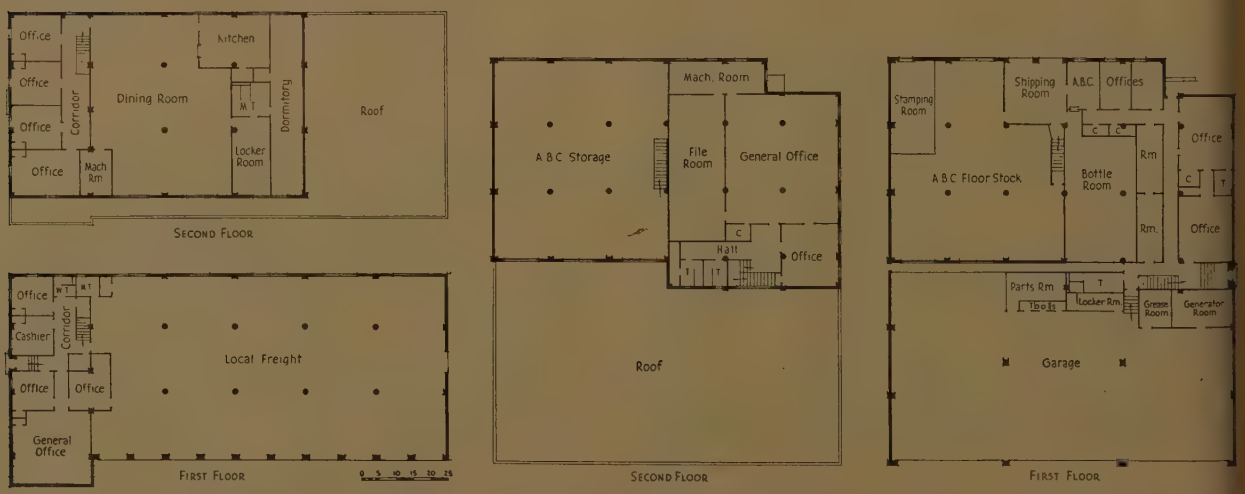
In order to meet the growing demand of this shipping public, it became clear that a progressive motor transportation business should own its own permanent place of business with a specially designed building that would meet the following conditions:

1. Proper and convenient loading platforms.
2. Adequate and comfortable space for office and clerical employes.
3. Sufficient room to store goods safely from vermin, weather, fire and theft.
4. Comfortable and sanitary dormitories for drivers who must stay away from their home town overnight.
5. Recreation rooms for drivers, helpers and other employes when they were not on duty.

We had secured highly intelligent drivers, helpers and other employes, and had given them proper training; we had substituted new and improved motor trucks for the actual transportation during the period from 1925 to 1935, and we were ready to make further improvement in the service to be offered to the public.

The problem of freight terminal planning to meet our requirements was placed before Harry L. Spicer, a Waco architect. After careful study of the cost, the proper character of the structures, and the use to be made of them, Mr. Spicer recommended architectural concrete buildings for the following reasons: First, concrete floors would permit heavy floor loads without damage; second, concrete would furnish firesafe storage; third, local materials were readily accessible and would result in low-cost structures; and fourth, the distinctive appearance would create in the minds of the shipping public the feeling of permanence and dependability.

Mr. Spicer recommended that concrete be used for foundations, floors, roof, columns and outside walls. In appearance, use, and cost, concrete met our requirements so well that the first building was to be a general office building in Waco with a garage for our general repair shop and trailer and body building plant. This building was constructed under Mr. Spicer's direction and was largely



Local freight terminal (left) and general office building (right) at Waco, Texas. Recreational layout in terminal building is typical of facilities provided for truck drivers in all Central Freight Lines buildings completed or planned. A third building is planned for Waco.

experiment for us. The results were so satisfac-y that a policy was formulated that wherever ssible, future construction should be in concrete.

In 1939, a local freight terminal was com-eted in Dallas with adequate office space and ight platform with ten freight doors on each of o sides of the dock. This terminal included a ncrete garage with wide driveways and surplus om for parking equipment. In addition to the cessary offices and space for handling freight, o features new to motor freight terminals were corporated in this building: First, a dormitory for en who would be away from home overnight; and cond, a recreation room for employes when they re off duty. This freight terminal proved satis-ctory and when the low cost together with its ditional advantages was balanced against the gh rentals paid for unsatisfactory buildings, fur-er construction was decided upon.

During the year 1940, four building projects ere undertaken. An old building was purchased Fort Worth and Robert P. Woltz, architect of ort Worth, was commissioned to remodel it, using ncrete floors, roof slabs and walls wherever neces-ry to add on to the used structure to be remod-ed. Likewise, at Cleburne, Texas, a small freight pot was needed and Mr. Woltz furnished plans d specifications for its construction.

During the last few months of 1940 a new odern freight terminal was built in Waco which cluded air-conditioned office space, truck-height eight docks, a dormitory, a spacious dining and creation room to be operated 24 hours a day for the nefit of employes. This building was, likewise, built of safe construction—architectural concrete. A small depot Taylor, Texas, was the final job for a busy year.

In general, the concrete walls of these new buildings re 8 in. thick formed against plywood to effect a smooth terior and finished with concrete paint in a light buff olor. Although the floor plans of the buildings differ ac-ording to available space, size of facilities and variations operations, the general appearance is similar and very istinctive. The floors throughout the buildings are concrete abs. The concrete canopies are cantilevered 8 ft. from the uilding walls. Built-up roofs with pitch and gravel surfaces re laid over concrete slabs. Rigid insulation is placed inside e office ceilings and walls, and air-conditioning equip-ent installed in the offices provides an 80-deg. year 'round mperature during all kinds of weather.

One important feature of each terminal plan is the ispatcher's office. A dispatcher's office must be kept open night and day and supervision given both over handling freight on docks and operating trucks on terminal grounds.

Loading dock canopy at new Waco building is a cantilever slab.

Terminal building, Waco, completed in 1940, bears a family resemblance to previous buildings. T. Brooks Pearson, of Waco, was associate architect for this structure which was built by Ed Johnson, Waco contractor.

A source of great pride to us are the facilities we are providing in these buildings for our drivers. The recreation rooms and dormitories include showers and locker rooms. The employes use these facilities to such an extent that we feel justified in having provided them.

These facilities result in trucks being loaded and dispatched by employes who are rested and who are always available on short notice, and schedules are met with a minimum of delay. Cargoes of freight are handled by men who have been well fed and who have enjoyed some recreation in a wholesome atmosphere when they are not on duty.

We take pride in having customers come to our freight depot to see just how their goods are handled across modern concrete floors and in buildings that are free from rats, insects, fire hazards, weather damage, or likelihood of theft. We, likewise, take pride in having played a part in leading the way for a new era in motor freight terminal buildings.

School for Eupora, Mississippi

By E. L. Malvaney, Architect*

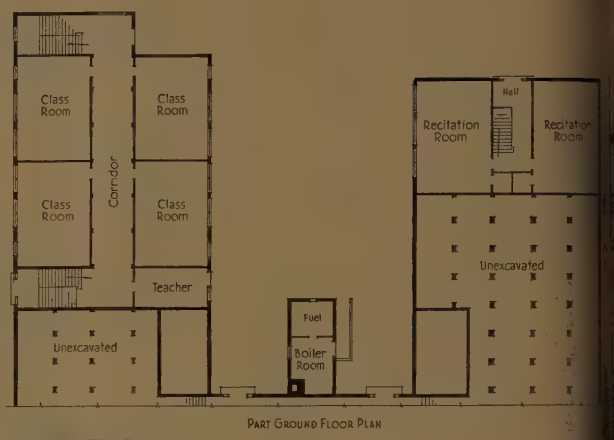
EUPORA, located in a moderate income region of Mississippi, decided in 1938 to take advantage of the current opportunities presented by public works programs, to replace an obsolete school building with adequate educational facilities at a cost within the limits of available local funds.

Our architectural firm was given the commission to prepare plans and specifications for a school to be built by WPA labor. This involved the usual problems of planning, but in addition to this, an analysis of types of construction that could be undertaken with maximum efficiency by the type of labor provided. The selection of architectural concrete was made after failure of other materials to satisfy the various requirements considered fundamental to the Eupora project.

A conventional U-shaped plan was prepared to achieve space requirements with the least possible waste of enclosed area. The sloping nature of the ground permitted utilization of additional floor space under the wings. The front portion of the building—or the bottom of the "U"—is the auditorium.

The wing portions of the building provide 15 classrooms including laboratories, and a large library.

*Jackson, Miss.



Part Ground Floor Plan

First Floor

Concrete canopied porches afford shelter for the entrances to the new school at Eupora, Miss.

School has 15 classrooms including laboratories, a large library and an auditorium. The slope of the ground permitted two stories at the rear of a d plan. Designed by E. L. Malvaney, architect of Jackson, Miss., it was built by WPA.

In order to keep within the funds of the sponsor, this ilding is practically without decorative detail of any kind. architectural interest is due chiefly to the arrangement the masses which outline the classroom wings and the ry-and-a-half auditorium structure. Over each of the five ge windows of the front, however, are molded plaques th appropriate symbols, and all of them are identical and m the same original mol. Additional interest is given e main facade by the use of canopied porches, a device ich provided needed emphasis to the entrances without ge additional cost.

Due to soft soil conditions it was necessary to run foun- tions to a level 10 ft. below grade at the rear end of the ilding. Above this point the walls are 8 in. thick for the assroom areas and 10 in. thick in the auditorium portion the structure.

The two-story portion of the wings—at the rear—have am and slab floors, but the one-story portions toward the nt have wood floors. The firesafe portion of each wing separated from the other by concrete firewalls running om foundation to roof.

Five-eighths-inch plywood was used for form sheathing, and with careful handling it gave several reuses with good results. The walls were rubbed with a thin grout mixture and some rough spots were stoned, but in general the smooth texture was uniform and required but little surface treatment. Inside walls were furred and plastered.

We found it very easy to hold the costs to the allowable maximum through the use of concrete, and experience on this project indicates that a good construction superintendent can run an architectural concrete job successfully with almost any kind of labor. We are highly satisfied with the results and the town of Eupora is frankly amazed that so splendid a school building could be erected at a cost so low to the sponsor. This structure cost about $110,000, of which $40,000 was the school district's share.

As the structure now stands there are classroom facilities for 500 students, providing for some expansion in future years. The auditorium, with seats for 700, has become the community center and is in constant use for all kinds of civic affairs. This is the type of school that concrete has made possible in hundreds of communities all over the nation, and they have been accepted with great enthusiasm by a grateful public.

The high school and grade school at St. John, Kan., are combined in one large building, the two units being connected by an auditorium and a gymnasium. [illegible] and M. C. Foy & Son, contractors, are all of Hutchinson, Kan.

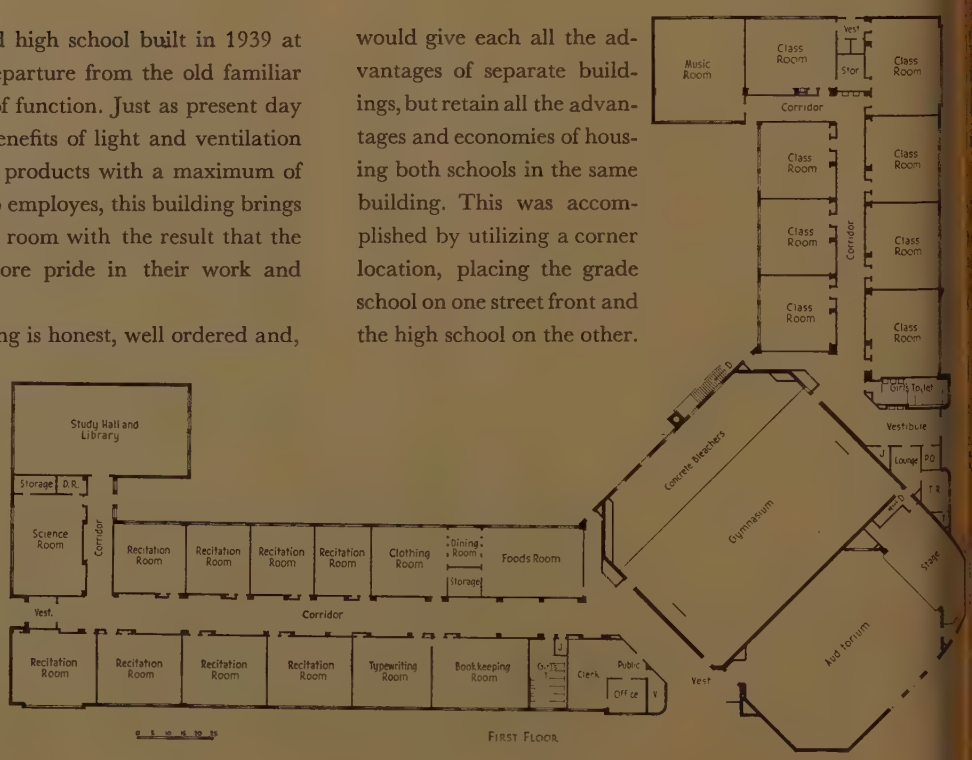
Two Schools in One—St. Joh

By R. E. Mann and A. R. Mann*, A.I.A.

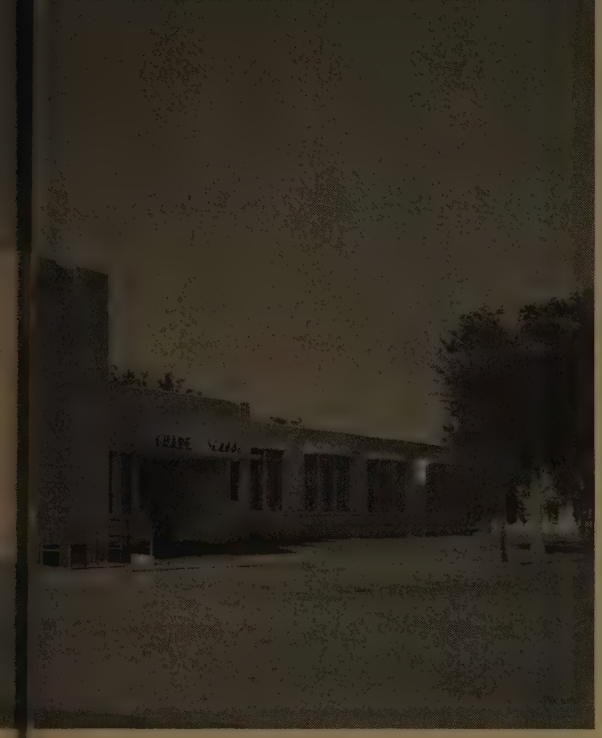
A COMBINED grade and high school built in 1939 at St. John, Kan., is a departure from the old familiar styles to a frank expression of function. Just as present day factories have utilized the benefits of light and ventilation to produce more and better products with a maximum of comfort, health, and safety to employes, this building brings these features into the school room with the result that the pupils and teachers take more pride in their work and accomplish more.

The design of the building is honest, well ordered and, we think, expressive of its function. It is acceptable and appreciated by those who live and work in it, and admired by all who have seen it.

One of the problems of planning was to assemble a grade and a high school into a plan that would give each all the advantages of separate buildings, but retain all the advantages and economies of housing both schools in the same building. This was accomplished by utilizing a corner location, placing the grade school on one street front and the high school on the other.



*Hutchinson, Kan.



e L-shaped structure. R. E. Mann and A. R. Mann, architects,

ansas

ocated directly in the corner of the section that connects e two wings are the auditorium and gymnasium, with oorways making both schools accessible to them without terference to either school unit.

The grade school portion, to the right of the corner id facing south, contains eight classrooms, principal's fice, teachers' rest room and other facilities. To the left id facing west is the high school containing classrooms, boratory suites and superintendent's office.

It is apparent, therefore, that both school units are riented to achieve maximum natural illumination, and ghting is further improved by increasing normal window reas to 26 per cent of the floor area. Window sills are 40 in. bove the floors and daylight intensity at the most distant esk top in any room is 10 foot-candles.

The structure is architectural concrete with partitions lightweight concrete masonry, concrete subfloors and a oncrete roof on bar joists. All floors are finished with sphaltic tile except in the gymnasium where maple floor-ng is used.

Exterior walls were formed against ¾-in. plywood ex-

cept where decorative features required corrugated iron sheets used as form liners for the fluting, and wood mold bands which ornament the edges of the entrance canopies. These details are simple and are used to accent structural and functional features of the design.

Three expansion joints run entirely across the building, dividing the relatively long frontages into separate units. Aggregates were carefully graded and the mix was vibrated in the forms to produce excellent concrete surfaces. After all walls were completed, the exterior was given two coats of portland cement paint to which a very light peach tint was added. The color effect is pleasing.

To test the first cost of comparable structures in architectural concrete and brick with stone trim, alternate bids were asked. The result, from bids submitted by four contractors, is as follows:

Two contractors bid concrete lower than brick—one of them $1,500 less and the other $8,300 less. Two bid concrete higher than brick—one $5,000 more and the other $2,500

Molded detail was limited to simple devices at entrances. The building was given two coats of portland cement paint of a light peach color.

The grade school unit is similar to the high school unit except that it is smaller. A feature of all windows is the concrete canopy which permits the flat rays of winter sunshine to enter but cuts off the steep summer sunrays.

more. The lowest bid in concrete, which was accepted, was $4,153 less than the lowest brick bid, or slightly under 3 per cent of the cost of the job. Contract price was $159,414. This comparison on the St. John project served to clear up a long standing argument over the competitive position of architectural concrete in this region. Despite its many obvious advantages, concrete can be built for as little, and many times, for less than other materials.

Jail for Beaufort County, S. C.

By Jules D. Levin, Architect*

DOWN on the old rice coast of South Carolina, where 200 years ago a landed aristocracy lived in splendor amidst fields of rice and indigo surrounded by moss-hung oaks, is the tidewater town of Beaufort. Rich in tradition, yet completely modern in their approach to present-day problems, the residents of Beaufort and Beaufort County have expressed enthusiastic approval of their new, gleaming white and far from traditional concrete county jail. It replaces an old structure dating from 1867.

*Beaufort, S. C.

As originally designed, the building was to be of brick. W[hen] it was discovered, however, that there were too few s[killed] workers among the WPA forces to execute the job i[n] masonry, the structure was redesigned in architectural c[on]crete. I must admit that I approached with some mis-g[i]vings my first experience with this type of construction, b[ut] will also admit that the results have far exceeded my e[x]pectations. Had architectural concrete not been available t[he] county would have had to abandon plans for a new jail. C[on]crete was really a life saver here.

Simple and utilitarian in design, the structure depends e[n]tirely upon the massing of three elements for its effect: t[he] one-story administrative section in front, the two-story c[ell] block, and the one-story service section at the rear. D[e]coration is limited to rustications at window sill and h[ea]d lines, and to strips and tile inserts on the parapet w[al]l of the cell block.

Eight-inch concrete walls were used throughout the b[ui]lding, and they are exposed everywhere except in the a[d]ministrative section which is plastered. All exposed sur-f[a]ces, cast against plywood, were painted after slight rub-b[i]ng. The concrete roofs were finished with tar and gravel.

Public reaction to this building can best be under-s[to]od by the fact that during the destructive hurricane that swept through this section in the late summer of 1940, large numbers of people abandoned their homes to ride out the storm in the newly constructed jail. After the wind had abated, many were heard to remark:

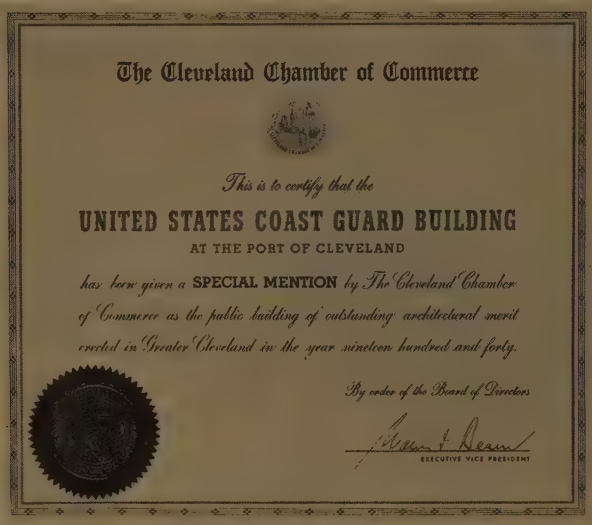
"No sir, she didn't budge a bit!"

I am very happy to have had the opportunity to build with architectural concrete. Realizing now the possibilities of this material, I do not hesitate to say that if I am ever called upon to design a public or commercial building, the material of construction will be concrete. Consideration of any other material would have to be weighed long and carefully against the numerous advantages concrete has to offer.

[Two] rear views of new Beaufort County, S. C., Jail, a modern [fire]proof concrete structure replacing jail of 1867 vintage. Jules D. [Ha]ger, Beaufort, S. C., was the architect. It was built by WPA.

File 10-7-1 Some Designs for New Structures in ARCHITECTURAL CONCRETE

The architectural firm of J. Gordon Turnbull & Associates, Cleveland, Ohio, and Sverdrup & Parcel, consulting engineers, St. Louis, have prepared plans for a huge Maintenance Command Building to be erected of architectural concrete at Patterson Field, Ohio.



The Cleveland Chamber of Commerce

This is to certify that the

UNITED STATES COAST GUARD BUILDING

AT THE PORT OF CLEVELAND

has been given a **SPECIAL MENTION** *by The Cleveland Chamber of Commerce as the public building of outstanding architectural merit erected in Greater Cleveland in the year nineteen hundred and forty.*

By order of the Board of Directors

EXECUTIVE VICE PRESIDENT

Widespread agreement that the Cleveland Coast Guard building (see ARCHITECTURAL CONCRETE, *Vol. 6, No. 4) is a beautiful job of concrete was made official with Special Award for architectural merit.*

CORRECTION: The address of Albert G. Gardner, architect of Broadway Pasadena Store, illustrated in last issue of ARCHITECTURAL CONCRETE, should have been given as Los Angeles instead of North Hollywood where he maintains a branch office.

Plans are nearing completion for Washington High School Auditorium, Fergus Falls, Minn. Foss & Co., are architects for this modern concrete building which will be erected by WPA.

Model of three architectural concrete units for Catholic Cathedral Parish, Bismarck, N. D. Building at left, under construction by James W. Guthrie Co., Bismarck contractor, is diocesan administration building; center building is school, and building at right is the cathedral for which the contract was recently awarded also to James W. Guthrie Co. W. F. Burke of Fargo, N. D., is architect for the project.

osed jail for Atchison County, Kan., is designed for concrete by S. W. , Jr., architect of Kansas City, Mo. Construction will start shortly.

Lindsey M. Gudger, Asheville, N. C., is architect for the Waynesville, N. C., City Hall, planned for future construction in architectural concrete.

under construction by WPA is Bayles District School, Dallas, Texas, one of several new concrete school buildings designed by the office of Hoke Smith, Inc., itects and engineers of Dallas.

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rson Industrial Building—Raleigh, N. C.

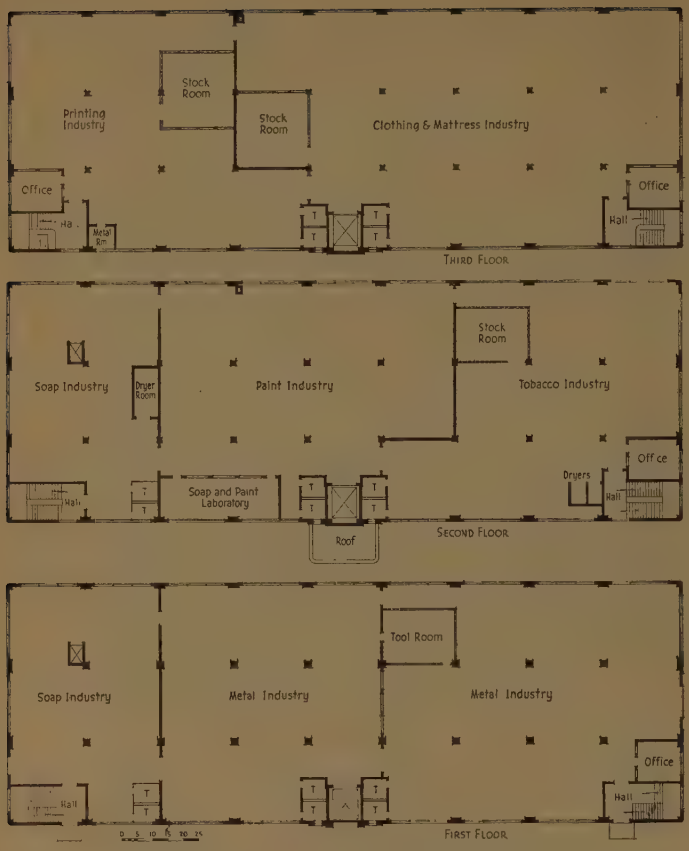
By W. L. Craven, Bridge Engineer*

NORTH Carolina State Prison, at Raleigh, has a highly developed department of prison industry under which inates are organized to manufacture various industrial ducts used by the state, including state license tags, and clothing for prisoners and guards. Prison workers also process tobacco and operate a print shop.

All this industry has recently been moved into a large three-story industrial building which was built by prison labor. It is a concrete structure, modern in design and

*rth Carolina State Highway and Public Works Commission.

te industrial building, North Carolina State Prison, Raleigh, N. C. Designed by the staff of the North Carolina State Highway and Public mission, it was built by prison labor.



planned for efficient operation under maximum illumination and adequate ventilation.

After considering various types of material for firesafe construction and the type of labor to be used on the job, concrete was thought to be the most economical construction as well as a method that would assure best results.

Construction work was put under the direction of C. B. Taylor, bridge maintenance engineer of the State Highway Commission who, with his able superintendent, W. L. Cutting, turned out a most creditable job as accompanying photographs reveal.

Forms for the building were of plywood erected in panels and raised as each succeeding lift was formed. Ready-mixed concrete was used throughout with excellent results. A uniform mix was maintained at all times and the material carefully worked into the forms by the prison laborers. The work proceeded without difficulties.

On completion of all concrete placing, the exterior walls were rubbed to effect a uniform, light-toned surface. Inside walls were finished with portland cement paint. All partitions are of tile with plaster finish.

The building, which was completed at an approximate cost of $140,000, was accepted for the prison by Hugh H. Wilson, superintendent of Prison Industries for the Prison Department, who considers it one of the finest industrial buildings in the state.

The walls of the prison building, formed against plywood, were finished with portland cement paint outside and inside. Built at a cost of approximately $140,000, it is considered one of the finest industrial buildings in North Carolina.

...ures built along the 392-mile aqueduct serving the Metro-...ater District of Southern California.

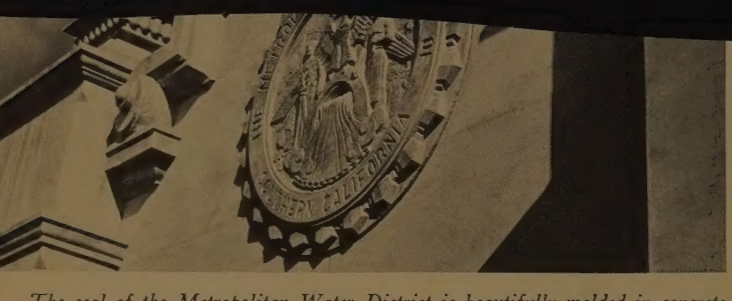
Water for Southern California*

THE long-felt need for an augmented water supply for California's south coastal plain was satisfied this year ...en water, impounded by dams in the Colorado River, ...s pumped, siphoned and carried through tunnels, canals, ...nduits and pipes over a distance of approximately 400 ...es to pour into the mains of 13 member cities of the ...tropolitan Water District of Southern California.

This long-drawn water, served up soft and pure into faucets of thousands of homes in the greater Los Angeles ...a, was the realization of a plan which became desper...ly important in the early 20's when it was realized that ... population, agriculture and industry of this great semi...d region was depleting the ground water supply 200,-...0,000 gal. per day faster than it could be replaced. And it ...presented completion of one of the most ambitious construction programs ever undertaken to provide a water supply anywhere. Were not the modern world too familiar with figures, dimensions and statistics in jumbo terms, the Colorado River Aqueduct which brings water over and under mountains would be called a wonder of the world.

There are wondrous things about it: 38 tunnels totaling 108 miles, 63 miles of concrete-lined canals, 55 miles of concrete-covered conduits, 29 miles of inverted siphons, 139 miles of distributing mains, and reservoirs totaling 974,000 acre feet. From Lake Havasu back of Parker Dam in the Colorado River, which is the source of the water supply, the water is lifted a total of 1,617 ft. by means of five pumping stations. And just before the water is carried into the 13 towns on the coast, a huge softening and filtration plant reduces water hardness from 300 parts per million to 85 parts per million. The ultimate capacity of the aqueduct is 1,000,000,000 gal. per day—a ten-digit figure which

*...formation and photographs used in this article were furnished by ...ian Hinds, general manager and chief engineer, Metropolitan ...ter District of Southern California, and by members of his staff.



The seal of the Metropolitan Water District is beautifully molded in concrete over entranceways of major structures.

Each pump house rests on a deep concrete substructu
and consists of a large room housing the motors and
adjacent control room. The superstructures are modern
general design with strong accents of Spanish or Medit
ranean motifs.

The huge softening and filtration plant, located
La Verne, about 30 miles east of Los Angeles, is mo
strictly in the Spanish manner than the pumping station
It comprises a towered main unit and several small

Intake Pumping Plant lifts water from Lake Havasu, starts it through tunnels, conduits and siphons to the water mains of southern Californ

Hayfield Pumping Plant is typical of the architectural design of the five pumping stations along the aqueduct.

ctures all of which comprise a community of archi-
ural concrete buildings. All of the structures were
ned against plywood to produce smooth surfaces, and
results in appearance are excellent.

F. E. Weymouth, of Los Angeles, was general manager
chief engineer of the entire project, with Julian Hinds,
stant chief engineer in charge of design. Mr. Hinds, on
gust 1, 1941, succeeded Mr. Weymouth as chief engineer,
rtly after the latter's death on July 22, 1941.

Architectural design of the pump house superstructures
of the softening plant was under the direction of
iel A. Elliot, architect for the Water District. L. H.
hill, a concrete technologist, was responsible for the
ction of concrete materials, design of mixtures and
ection, and thereby is credited with the excellent re-
s obtained on all projects in which concrete surfaces
exposed.

The complexity of contracts makes it difficult to sift
n the costs of the various architectural structures,
ough some idea of the costs can be gained from the
vfield Pumping Plant records. This structure, complete
n the present equipment and installation charges, cost
ut $3,500,000, of which the superstructure represented
roximately $100,000 and the substructure $166,000.
Iron Mountain Pumping Plant, lowest in cost of the
, represents an expenditure of $2,200,000.

Circular lobby of the administration building of Softening Plant at La Verne has a terrazzo floor and Spanish concrete tile wainscot.

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● *For Washington National Airport Buildings—Louis A. Simon, supervising architect; Howard L. Cheney, consulting architect; Neal A. Melick, supervising engineer; John McShain, contractor.*

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